

Subject: Sustainability considerations within Lebanese University North Campus - Tripoli

The Lebanese University North Campus is still under construction. It is located on a land of 130,000 m<sup>2</sup> and will have 200,000 m<sup>2</sup> built-up area. It will include 8 Faculties and accommodates 18,000 students in addition to Library Central cafeteria, Dormitories, Sport complex, in addition to 50,000 m<sup>2</sup> of Landscaped areas; the Faculty of Sciences, Faculty of Engineering, and Faculty of Fine Arts and Architecture are already constructed, the Faculty of Public Health is under construction.

Some of the key elements of sustainable considerations within the Campus:

1- Energy efficiency & Energy management:

In order to reduce the energy consumption for HVAC, Low Energy consumptions chillers with high COP's are adopted for the cooling system for each building, that takes into consideration the diversity of cooling demand within the building; this will contribute in energy management and efficiency.

All systems are controlled via a Building Management System allowing automation of all technical systems for an appropriate Energy management.

A Central Heating system within each building is used as well, having the same characteristics of the cooling as mentioned above. This system provides also the heating water for the domestic hot water production.

2- Economizer cycle:

Economizer cycle that uses cool outdoor air (at tempered mid-season) to cool the building (or warm outdoor air to warm up the building) instead of operating the air conditioning system within the building is implemented in lecture halls (amphitheatres) as ventilation system. Economizer cycle aims at saving the energy for cooling/heating productions.

3- Water saving:

Water saving sanitary fixtures are used (example: temporized faucets, low water demand flush valves...).

4- Double glazing and buildings envelop:

In order to reduce energy consumption for HVAC, double glazing is used, which minimizes the heat transmission and provides good soundproofing.

On other hand, the buildings envelop and related materials are designed and selected to minimize heat transfer onto the buildings and to provide more shading, thus ensuring optimization on the cooling system.